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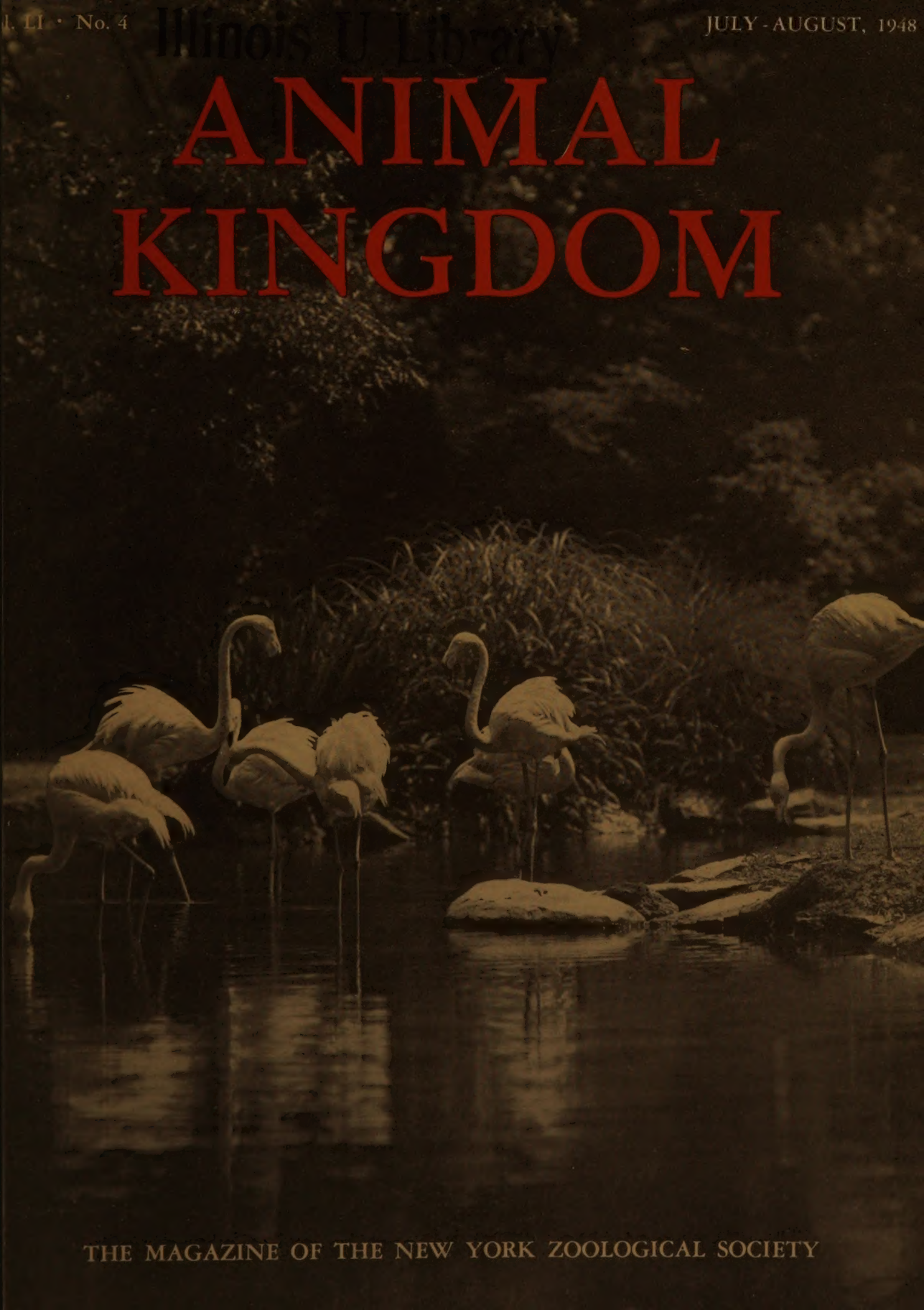
ANIMAL KINGDOM



THE MAGAZINE OF THE NEW YORK ZOOLOGICAL SOCIETY

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ANIMAL KINGDOM

BULLETIN OF THE
NEW YORK ZOOLOGICAL SOCIETY

VOL. LI AUGUST 10, 1948 No. 4

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"Once gone, they're gone forever"

"ONCE GONE, THEY'RE GONE FOREVER." This poignant statement applies directly to the relatively few remaining wilderness areas in our country and to the wildlife harbored by them. It is a truth that should be widely recognized in our country in the years that lie ahead. It needs no gift of prophecy to foresee that within the next decade an increasing number of reasons will be advanced to justify incursions of one kind or another into our existing protected national areas such as federal or state parks, national monuments and wildlife refuges. Even today a steady barrage is being fired to breach these precious places either for the timber they may contain, for the oil that may lie within them, or for the tapping of their water resources. The exploitation of these protected regions can find no justification, economic or otherwise. They represent at most but a fractional part of our total land area. There is not much sense in scraping the bottom of the barrel. In other words, we would do better to face the facts and make other readjustments in our national economy rather than to draw upon these final and ultimate reserves which, over and above any material uses, have immeasurable values.

It seems well that all who are interested in Conservation should be prepared for these inevitable pressures which are likely to increase within the next few years. A contributing factor will be the large and rapid increase in the population of our country that we seem to be facing. It now appears that we shall probably have at least another 20 million people in this country by 1960 – only 12 years away. At that time, with the inevitable spread of urbanization, our few remaining wildernesses will be more precious to us than ever.

Fairfield Osborn

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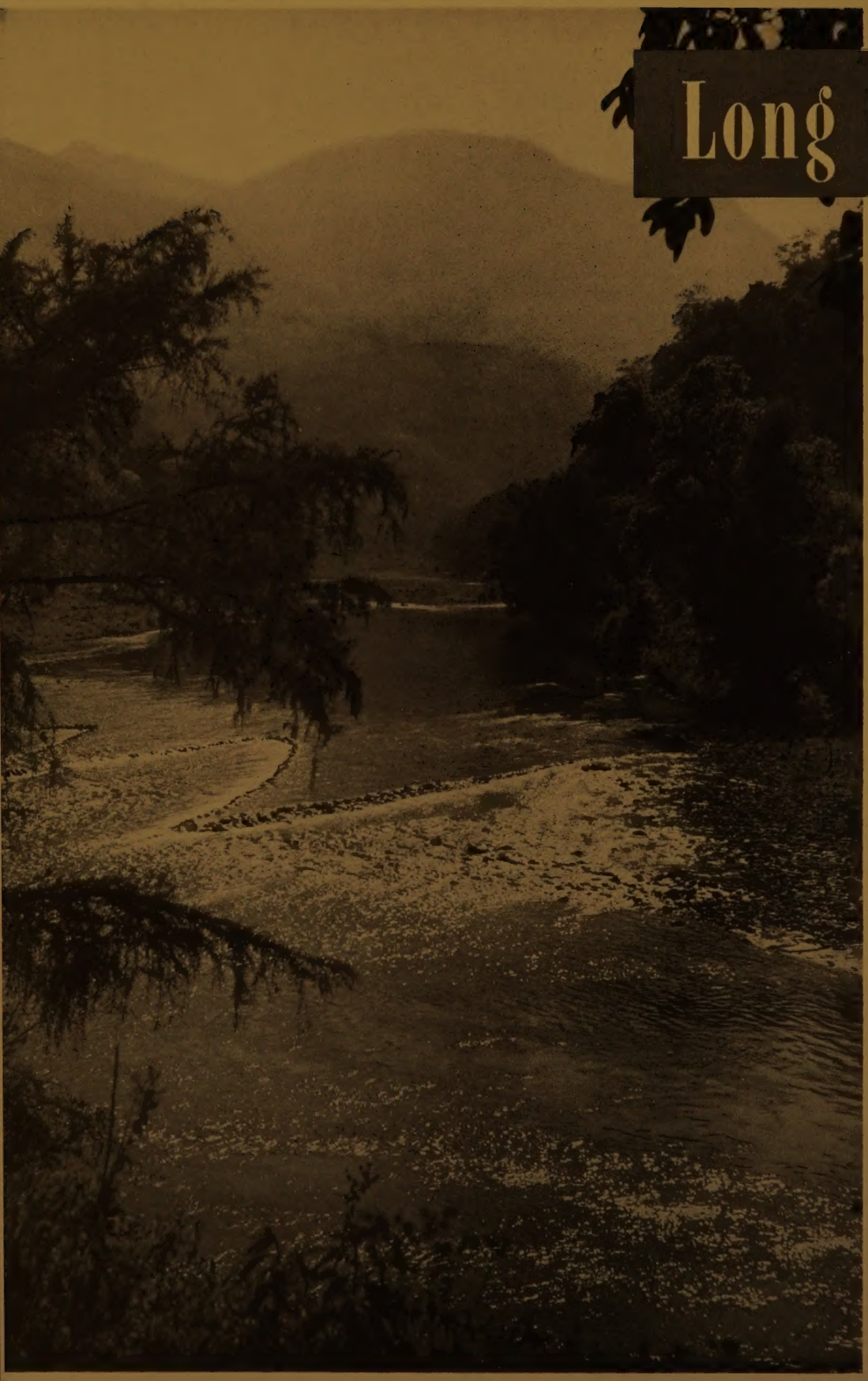


Long Distanc

Mexicans were doing their own fishing in the Rio Moctezuma, although for food instead of science. The fish are guided by the zig-zag rock barriers into basket-like traps.

Photo by F. G. Wood, Jr.

ishing Trip

By JAMES W. ATZ

THE Zoological Society's Mexican Expedition has been making an eight thousand-mile fishing trip in the hope of establishing a rather abstruse genetical point. There were other reasons, too, but that was the principal one. Specifically, we wanted to learn what happens when a spotted platyfish from one river system is crossed with a platyfish of the identical species from another river system.

Maybe nothing happens except a swarming brood of healthy platyfish.

Or maybe something else happens and we learn a little more about the inheritance of cancer . . .

Three of us made the trip. Leading it was Dr. Myron Gordon, the Aquarium's Geneticist, and F. G. Wood, Jr., a young zoologist from Yale University, and myself accompanied him. Dr. Gordon has been working on the genetics of black cancers, or melanomas, in fish for more than twenty years.[1] His research has proved important enough that the National Cancer Institute has been financing it; a renewed, and larger, grant for that purpose was made available to the Society the first of last month. This work on the inheritance of cancer "is of particular interest," writes Dr. W. E. Heston, Principal Geneticist of the National Cancer Institute, "in that it appears to offer an approach to the study of the malignant change. The way is open for the identification of the specific genes affecting the malignant transformation."[2] Our trip to Mexico was made to further that identification, to further the search for fundamental causes of cancer.

Even if you have thought much about cancer – and it's not a pleasant subject – you probably have not thought of it except in terms of human suffering. But other living things are afflicted with it, too – things as diverse as plants, flies and fishes. This is fortunate, for us, because we are thus enabled to study malignant growths in ways we never could with human beings. Since all cancerous growths may have characteristics in common and since the cancers of fishes and mice, for example, are almost identical with those in man, much of what is found out about the disease in lower animals can be applied towards the solution of our own problem.

Cancer, however, is no more frequent in lower animals than it is in man, and the scientist would be hard put to it if he had to wait until a lucky chance presented him with a cancerous specimen. Instead he has learned how to produce abnormal growths in experimental animals at will. One way is by establishing genetic strains of laboratory animals that are especially susceptible to cancer-inducing agents or that spontaneously develop neoplasms. Dr. Gordon has produced several such spontaneously cancerous strains of fishes.

A Japanese investigator once found only four melanomas or black cancers in more than 100,000 fishes he examined from the wild. Dr. Gordon has bred many hundreds of fishes with black cancers, and what is more, he can produce them in either sex, to the exclusion of the other, and

[1] From Quetzalcoatl to Cancer. *Bull. N. Y. Zool. Soc.*, 44 (3): 76-83, 1941.

[2] *Advances in Genetics*, 2, N. Y., 1948.

even place them on certain parts of his fishes' bodies, as he chooses.[3] He does this by hybridizing them.

That is where the platyfishes and their close relatives, the swordtails, come in. These small, tropical fishes are found only in the fresh waters of Mexico, Guatemala and British Honduras, in many of the scores of streams, big and little, that pour down from the central Mexican plateau into the Atlantic. There are four different species of platies and three different species of swordtails. Some live hundreds of miles apart in widely separated rivers; others live side by side in the same streams and pools. In either case, they never hybridize in nature. Thousands upon thousands of specimens have been carefully examined by Dr. Gordon and Dr. Carl L. Hubbs, our foremost fish taxonomist, and not a single hybrid has been discovered. In captivity, however, they can readily be made to cross. The hybrid offspring are fine-looking, vigorous fish, often larger and longer-lived than their parents – unless one of these was a Common Platyfish (*Platypoecilus maculatus*) bearing a *spotted* color pattern. Then the hybrids are excessively black, and as they grow older, many of them develop black cancers.

[3] *The Biology of Melanomas*, N. Y. Acad. Sci., 1948.

In brief, this is the valuable biological tool Dr. Gordon has fashioned and analyzed through crossing different species of fishes.

One of Dr. Gordon's most interesting discoveries was that the greater the difference between the spotted Common Platy and its mate, the quicker-appearing and more intense were the black cancers on their offspring. Crosses of spotted Common Platyfish with the three species of swordtails produced more diseased fish than those with the three other species of platyfishes; crosses with Couch's Platyfish from the Rio Grande (1,000 miles from the Common Platyfish's home waters) led to more cancerous offspring than those with the Variatus Platyfish from the Panuco river system (only 200 miles away). Then the question naturally came up: would Common Platyfishes from different river systems show this same incompatibility when crossed? Perhaps the very beginnings of cancer-producing *genetic imbalance*, as Dr. Gordon puts it, could be detected in crosses between different geographical populations, or strains, of a single species.

That was what led to our expedition to southern Mexico early this spring.

In 1939 Dr. Gordon captured live Common

In two hours Dr. Gordon and his associates took 1,010 platies from this drainage ditch at Minatitlan in the state of Vera Cruz, the largest single haul of the trip. This is fishing station GAW 17.

Photo by F. G. Wood, Jr.

Platyfishes from Mexico's Rio Jamapa. Their descendants still live in some of the tanks devoted to maintaining pure cultures of various strains of fishes in the New York Aquarium's Genetics Laboratory at the American Museum of Natural History. To cross with them, Dr. Gordon needed Common Platyfish from one of the more southern rivers. The Rio Coatzacoalcos seemed to fill the bill. It was at least 200 miles away from the Jamapa, and moreover, no one had ever systematically collected fish in it, so a large number of preserved specimens from it were needed by Dr. Gordon to complete evolutionary studies correlated with cancer work.

Three platyfishes collected at station GAW 17 and shipped back alive to New York. The one at the bottom has a spotted dorsal fin pattern, which means that it will produce cancerous hybrids.

And so on February 16 we set out for the Isthmus of Tehuantepec and the Rio Coatzacoalcos, the River of Snakes. On our way south we stopped at Laredo and Mexico City only long enough to make necessary arrangements, and in Vera Cruz we put our automobile in storage, for there are no through highways on the Isthmus. Our first collecting point was Jesus Carranza, a small railroad town on the Rio Jaltepec, tributary to the Coatzacoalcos. Incidentally, "River of Snakes" is a misnomer; we saw very few.

Here we fished in eleven different localities, some of them pretty, jungle arroyos and others muddy, noisome holes, but only secured slightly more than 100 platies and a similar number of swordtails. It was hard work getting even those few. Although these two species occur in a number of different kinds of streams and pools, they seem to prefer those spots that are hardest to collect in. Swordtails like small, jungle-covered streams, whose dark waters hide hundreds of snags that tear a seine and spoil a fisherman's disposition and whose rubbly beds and undercut banks ruin many a haul by providing numerous avenues of escape for trapped fishes. Platyfishes prefer stagnant lagunas or slow-moving rivulets whose waters are choked with aquatic plants out of which the fish must almost literally be dug and whose soft, muddy bottoms make every step an exertion. At Jesus Carranza we collected far more mosquito, rotodore (black fly) and piñolia (baby tick) bites than we did fishes. While we toiled in the steaming sun, the Chachalacas seemed to mock us with their hysterical cries. These birds are similar to our own Road-runners, but they sound like chickens with nervous breakdowns and they are especially derisive when one is bending over an empty seine.

Our next stop was down-river at Minatitlan, where we were guests of Petroleos Mexicanos

Narrow jungle streams were often good hunting grounds for platyfish and swordtails, but they presented difficulties to the fishermen—snags and thick-growing water plants. Here Wood is seining alone.

which maintains a large modern refinery there. The people of Pemex were most generous with their facilities and had much to do with making our expedition a success.

Dr. Gordon figured that Minatitlan should be right in the heart of platyfish country. This was his fourth trip to Mexico in search of platies and he has seen more of them in their native habitat than any other man. Simply by looking at a body of water he can usually tell whether the fish he wants are in it. We wanted to find a place with hundreds, not scores, of Common Platyfish, however. That was why we went to Mexico during the dry season. Towards the end of that time, the waters of the land become concentrated into a few areas. What were once raging rivers become quiet streams, with shallow side-pools, and what were once great sprawling lagunas shrink to small ponds and mud-holes. Along with the concentration of water goes a concentration of the fishes living in it. Whereas a good seine-haul in the wet season might yield a dozen fish, in the dry season hundreds can be taken with one sweep.

Back in 1939 Dr. Gordon hit a "platyfish jackpot," getting more than 4,000 at one spot in a few days. We had no such luck on this trip, but just outside of Minatitlan we discovered a series of small drainage ditches that provided us with our largest single collection of the whole expedition. Station GAW No. 17, as it came to be designated in our Field Book (GAW being the initial letters of Gordon, Atz and Wood) did not appear to be promising at first. True, there were a couple of platies in the net after most of our hauls, but there were many more Common Mollies, Mexican Mosquito Fish and Sardinas (*Astyanax*). We were always interested to learn just what piscine neighbors our platies associated with, but often wished they were not so numerous. A netful of ubiquitous Mollies can sometimes be more annoying than no fish at all, when you're platy-bound and not having much success. For although platyfishes and swordtails are widespread, they are not numerous save in those relatively few places specially suited to them.

While Wood and I fished, Dr. Gordon explored. Soon he called to us, "Here's a spot we

ought to try. Let's bring the seine up here." Superficially the ditch where he stood seemed identical to the one in which we were now fishing; in fact, it *was* the same channel, just a few hundred feet upcurrent. Closer examination, however, showed that it was slightly narrower, had higher banks, a muddy instead of sandy bed and, most important, some aquatic plants, principally Moneywort, growing along either side. Such differences can "make all the difference."

Wood and I moved in and started to seine. A seine is basically an oblong fishnet with two vertical poles at the ends, but manipulating this simple contraption can be quite a complicated affair. Different techniques must be employed under different circumstances. Here, one of us placed his pole as close to one of the banks as possible and with his free hand grabbed the net by the lower edge and held it firmly against the bottom and side of the ditch. The other seiner placed his pole slightly upstream, leaving a pocket in the net that billowed out slightly behind his partner. As we both moved upstream, the man by the bank dragged the seine right through the submerged plants, uprooting them or thoroughly "combing them out." After moving about six feet, the upstream fisherman swung the seine around to the bank to join his partner and then both of us lifted the net simultaneously, being careful always to keep it tight against the bank.

Dr. Gordon's expert eye for platyfish hideouts had not failed him. We soon had hundreds of specimens. Thirty of the best were set aside to be shipped alive to the Genetics Laboratory; the remainder went into preserving bottles for future study. We fished this 120-foot stretch of small drainage ditch steadily for two hours – until we caught no more fishes in it – and came up with a total of 1,010 Common Platyfish. Above and below this spot they were scarce. This was the location they preferred to any other, and here there were more of them than of any other species.

If any single Station could be said to have "made" our expedition, GAW No. 17 was it. Having taken that collection, we had accomplished our minimum requirements in the field and all subsequent achievements could be considered as "gravy." The task of getting the living fish back to the Laboratory, remained, of course. From Minatitlan they were shipped by air express to Mexico City, where they were rested and cared for by Sr. Jorge Delaye, the leading fish fancier of that city and a good friend of Dr. Gordon. Later we sent these Coatzacoalcos Platyfish on to New York by air, and they are now being crossed with their more northern relatives from the Jamapa. It may be many months before the first reports about the effect of hybridizing fish from different river systems can be made, but all along the way Dr. Gordon will be learning more about the theoretical basis of cancer. Through his technical publications, that knowledge will be incorporated into the ever-growing body of knowledge about the disease.

Dry weather creates shrunken pools like this one, which held two swordtail species and one kind of platyfish. They hybridize readily when kept in the laboratory but never in the wild.

Photo by F. G. Wood, Jr.

Safari to Carolina

By BRAYTON EDDY

THE place was said to be "reeking with rattlers." We knew it was true because we had visited this particular spot in South Carolina the previous year. Not only were there rattlesnakes in abundance, but likewise there was an amazing assortment of other reptiles, amphibians and insects geared to our particular interest. For this was a zoological transition zone where north meets south and species typical of both regions overlap.

It was a land of pine ridges and shallow swamps, of yellow jasmine and turkey buzzards. The time was early March, 1948.

On our first visit a year ago we had been skeptical of reports. Reptiles were not likely to remain plentiful, it seemed, on a 45,000-acre tract where underbrush had been burned over each spring for quail shooting and where for fifty years a vigorous "vermin" campaign had resulted in the killing of thousands of serpents. Yet here they were and no mistake. It had gotten so bad that many members of the resident hunt club refused to go out any more. They were scared.

But such a place was grist for our mill. We needed live specimens for our Reptile House and for trading with other zoos. It was my job to bag them. Sam Dunton, Staff Photographer, was along to get pictures. Any spare time during the allotted three weeks was for making original observations.

We were fortunate in having a pick-up truck provided for carrying our specimens back to camp

and in having saddle horses for the actual hunt. Some spotting of snake holes had been done previous to our arrival by natives of the region, who later accompanied us on the field trips to "watch the fun."

"Snake!" someone would yell, which was my signal to dismount and prepare for action. If it was a rattlesnake, a meal sack was tied to a nearby tree and a man with a long-handled shovel was assigned to hold it open.

Cautiously I approached with a five-foot pole terminating in an iron hook. The trick was to slip the hook under the midriff, raise the venomous creature off the ground in balance and cause it to dive head first into the bag. Sometimes the snake would coil and make the task comparatively simple; but again it would dart in almost any direction, when some fancy action with the snake stick was necessary to prevent its escape down a hole. Rarely did it come in my direction. Once in the bag, a piece of twine tied about the top kept it confined.

On sunny days, of which there were only four, rattlesnakes were found on pine ridges close to their holes. The lowlands were flooded from incessant rains and even the holes were half filled with water. Actually they were shelters under the roots of pine trees lifted by a former hurricane. The snakes could dive into them and come up for air under the trunks. It was useless to probe a hole even partially covered by a spider's web or where the earth was not firmly packed. Such a hole would not be productive.

When a likely spot was discovered, we probed it with a long stick. Sometimes a rattling noise was heard or a triangular head poked itself out of the water. If the snake could not be reached with the hook, a side tunnel was dug until coils of the body were exposed. Most rattlesnakes taken in this way were either large Eastern Diamond Rattlers or Canebrake Rattlers. The Carolina Pigmy Rattlers were caught in the open or taken from behind the loose bark of pine stumps.

Cotton-mouth Moccasins were the most difficult poisonous serpents to capture with an ordinary snake stick. Invariably they stretched out on the edge of an embankment, under a briar brush, or beside a floodgate where they could easily slither into the water. Their brown bodies render them hard to see, and they rarely wait to

determine what you want before making a noiseless getaway. If you do succeed in getting between them and the water, and they feel themselves cornered, they will stiffen their bodies and tumble off the hook. For this reason I prefer to use a grab stick made of an old T-model Ford emergency handle. By pressing a lever at one end, a pair of pincers goes to work at the other.

Non-poisonous snakes were caught with bare hands. It is the surest method and least likely to cause snake injury. You may be harmlessly bitten unless you grab close to the head, and because snake saliva delays coagulation considerable bleeding may result, but it's worth it. Coachwhip Snakes, Black Racers and yellow Chicken Snakes are particularly quick to bite.

Coachwhip Snakes are also very fast. They can almost outdistance a man. Extremely nervous, they are quick to size up a situation and dodge into the nearest brush pile. With their black head and neck raised in flight, it is extremely difficult to follow their slim brown bodies as they glide along the ground. They can also take to low bushes or the bottom limbs of young trees. One specimen was over six feet long.

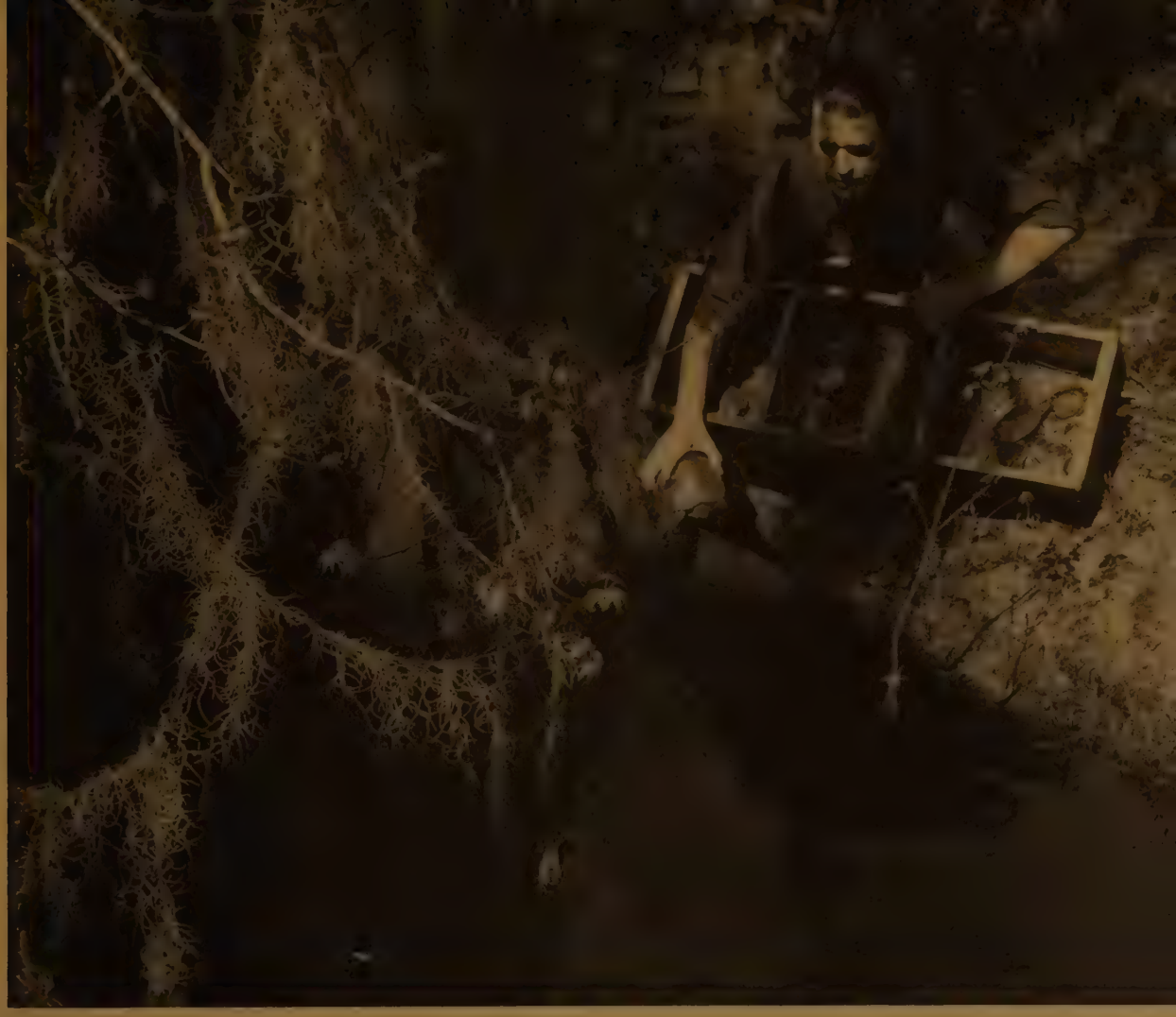
Cotton-mouth Moccasins were hard to capture when they took refuge under a briar bush or beside the water. Out in the open it was easier, as Mr. Eddy is demonstrating here.

In the cool morning hours young Corn Snakes, Chicken Snakes, Milk Snakes and Black Racers were commonly found behind loose pine bark. Southern Ribbon Snakes like to sun themselves on briar bushes. So do Chain King Snakes; and should a small rodent pass on the ground below, they will drop and wrap it up for dinner.

Four-lined Chicken Snakes on warm days often take a siesta on the lower branch of a chinaberry shrub. Both Northern and Southern Hog-nosed Snakes and Southern Pine Snakes were noted hunting toads and rats along the ground. One of the former species was as black as a charred stump — a melanistic phase. DeKay's Snakes were discovered under fallen logs and one 10-inch Southern Ground Snake had hidden itself in a dangling rope of Spanish moss.

When it rained, as it did for eight days on location, or when the temperature was too low for reptile navigation, we barked trees for lizards and invertebrates. By suddenly stripping the loose outer covering from dead pines, we were able to grab Blue-tail Lizards, Brown Skinks, Fence Lizards, American Chameleons and centipedes before they realized what had happened. One Greater Five-lined Skink and several Southern Toads were likewise caught in this fashion.

One day we noted a wild commotion on the trunk of a giant live oak. Around and around the object circled, until at last it ended up close to



Reverse collecting — Curator Eddy liberating seventeen Cumberland and Florida Terrapins in a South Carolina swamp. They were surplus stock that had accumulated at the Bronx Zoo.

the ground. Three young gray squirrels had gotten their tails entangled in Spanish moss, supposedly from their nest, and were trying desperately to disengage themselves. One squirrel was already dead from fighting, and we were obliged to shoot the other two. It reminded us of a Snowy Egret which had met a tragic death the day before. On coming in for a landing beside its clutch of eggs, its long neck had become twisted around a projecting willow branch and there it hung – dead.

On starting for home upon a deserted highway, we encountered four turkey buzzards sparing for a cat run over the night before. One buzzard pecked at the head while the others sought to make off with the hind quarters. But each attack was driven off by the head-eater, which raised its wings threateningly and jabbed with its sharp beak. First come, first served seemed to be the prevailing urge; but unfortunately we could not stay to watch the outcome.

We had made our bag. There were 83 snakes of 16 species, 23 lizards of 4 species, 3 amphibians of 2 species and innumerable invertebrates of 6 species. Some are now residing in the Zoological Park, while others have been traded to Copenhagen, Washington, Chicago, Portland, St. Louis and Prague. With numerous colored slides, black-and-white photographs, and original observations added to our collection – it would seem as if our safari was a success.

May Morning on an Expedition

By WILLIAM BEEBE

THE MORE VIVID and absorbing an experience, the greater the difficulty of putting it into words for other persons. The facts of history are more palatable when hung on definite dates: the Fourth of July, the Eighth of November (the official opening of the Zoological Park, in case you have forgotten!). So perhaps a few of the many happenings of part of a single day in the jungle may make our interests and activities more real.

THE MORNING OF MAY THE FOURTH, 1948.

3:00 A.M. – Awakened by the welcome drumming of heavy rain. Perhaps the weeks of delay are over, and the tropical spring is here.

5:00 A. M. – Reawakened by the terrific roaring of a band of golden howling monkeys, who seem to agree with me about the possibility of spring. They roar for an hour, from the jungle almost overhanging Rancho Grande, and again I take careful notes of their voices. Again the decided difference is apparent between the howlers here and those of Kartabo, five hundred miles to the east. These, except for occasional falsetto, utter dominantly the jaguar-like roaring; those of Guiana are always varied, with a great deal of sealion-like bubbling and gargling. No two Chinese dialects could differ more. As specific criteria, psychological and vocal distinctions, such as these, will come in time to be as important as physical differences.

This, the most awesome of all jungle sounds, may never be heard in our Zoo, for howlers, both babies and adults, mope and die in a few days or weeks. Yet the little chaps are most affectionate and eat freely. Someday we will send Len Goss to the jungle to veterinize a baby golden howling monkey and bring it back in perfect health. It will be an exhibit as rare as a Yapock or Afropavo.

At 6:30 while finishing breakfast, a sharp *ki-ki-ki* sends me headlong to the giant binoculars, already focussed through the open window on the topmost stub of a candela tree, one hundred feet above the ground. On it, one hundred yards from my eye, is a male Bat Falcon, nine inches of fierce hawk, holding in his talons a second prey of the day, three inches of glittering green hummingbird. I record its name, after reference to the skins behind me (*Chlorostilbon prasinus caribaeus*) male, as certainly as if the little bird was in my hand. The female falcon swoops into my field of vision, takes the bird from his claws and devours every part, even beak and feathers. She had already, as I saw from my bedroom window, fed her two chicks a bat, so she deserves this meal for herself. This is the third month of watching the inception and development of all the varied instincts of the parents and young of these splendid birds.

At 7 o'clock we leave the laboratory and under the windows I pick up two dead birds. One is our familiar northern Redstart, which, had it not been for the hypnotic power of our electric lights, would now be far on her way to our Zoo, or Vermont or Canada. The other bird is a plump Ruddy Quail Dove. Besides Venezuela, this bird breeds in Cuba, and this is doubtless a migrant to its insular home, though no such habit has ever been suspected.

We walk on toward the howlers' tree and find the jungle vocal with new sounds, all having something to do with spring. Tinamou are call-

ing from the distant valley and close at hand a male curassow begins his courtship in a voice so bass and deep that it is near our lowest register; *ooom! ooom! oom-oom!* (with mouth closed), as very rarely I have heard them in the Zoo. Only in the Zoo have I ever seen the bird loudly clicking a pebble in his beak as he *ooms*.

As vivid to our nostrils as are the sights and sounds to their respective organs of sense, come the scents which fill the cool, humid jungle air. With a sudden shock we abruptly enter a zone of solid sweetness, and only our glasses reveal the newly-opened masses of orchids among the air-plants high overhead. Then we encounter a sharp, whiplash of musky odor, marking the path, like smoke-writing, where some insect has recently flown past.

FROM 9 o'clock, for an hour, I watch the cacique colony, just beyond the howlers, and record a new phase of oriole behavior. A female, whose nest had blown down, is in the act of beginning a new one. A second great, swinging, woven structure three feet in length is no light undertaking, and in her haste, she is led into crime. In this species there is never any mutual assistance, except attack upon a common enemy, but always there is a friendly tolerance and complete respect of one another's homes. We watch this bird steal building material right and left from her sisters' nests, but soon she gets careless, is caught in the act and chased angrily by the owner. As it turned out this unique psychological trait was to last only three days, when, for some unknown reason, she would again depend upon her own efforts, finding her own fibers and vines in the adjacent jungle. Her victims showed no memory of her delinquency. It was a temporary deviation from the normal, which, if it became general, would soon disrupt the whole colony. Only patient and consecutive observation on our part would ever have revealed such unsuspected behavioristic lapses, interesting individual deviations from the pattern of instinct. As in other creatures inhabiting the earth, not unrelated to ourselves, such peccadillos become criminal only when the author is caught in the act.

The next turn in the road beyond the cacique colony we have named Atta Curve because it is the site of an enormous nest of leaf-cutting atta ants. At 10:30 I stop here and see at once that spring has come also to Solomon's ideals of wisdom. Last night hundreds of kings and queens, alias the winged sexes, came to the surface of the nest and flew away on their nuptial flight. Four more giant queens are now, before me, being groomed for their flight, and the sight arouses equal emotions of amusement and pity.

It is impossible to watch without thinking of a giant plane being readied for some important mission. Yet we, who look down as gods might oversee human activities, are aware that something is very wrong. Every member of this delayed squadron of departing queens has some serious defect; one has a dent in her body armor, another a twisted wing, and so on. But the workers do not know this.

We watch one enormous queen as her attendants literally drag her out of the nest entrance, on to a bit of level ground, a cleared formacine runway. As far as size goes, the worker ants helping her are like a pack of fox terriers around an elephant. Eighteen form this devoted ground crew, and they are all over her. Three tug at her antennae as she walks along with a slow and wavering gait. Others crawl over her great wing expanse and rounded body, cleaning and scraping off every particle of dirt. She has been reared in a special chamber, fed on very special diet; this is the climax of her life.

Suddenly she lifts her wings and gives them a preliminary flutter. Eight workmen mechanics are hurled to the ground, but instantly are back, frantically inspecting every leg joint, every segment. The wings vibrate in high gear and off she goes, two, four, six feet into the air. One overenthusiastic helper failed to jump in time and I can see him, in midair, clinging to one of her legs. She circles once with a lumbering flight, then crashes headlong, falling directly into the center of a wide atta trail. It is filled with a busy throng, scores of ants going out empty-jawed, many returning with their banner-like bits of green leaves. Her descent causes commotion, but attracts no lingering interest. There are no kibitzers among the attas. These have their own definite job in life, wholly unconcerned with any royal take-offs.

The lone mechanic hitch-hiker wanders about aimlessly; the queen rests motionless with droop-

ing antennae. Her life's chance is gone, and here I leave her. Even if we describe this happening in the most technical language, it is sheer tragedy.

At about 11 o'clock I reach Portachuelo Pass, two hundred yards from the laboratory, and find Henry Fleming back from a trip up Pico Paraiso, now on watch at the head of the gorge. Two butterflies have flown up this pathway in the last hour, and as I arrive a third is caught. Except for our records of two years ago, this would be nothing but the most trivial occurrence, with no significance. But we know that this trio is the advance scouts, which in the weeks to come will swell to millions upon millions, and unbelievable numbers of species of butterflies and other insects. This year we hope, as a major achievement, to solve the cause of this wholesale migration of astronomical numbers of Venezuelan insect life. If we succeed, the results will be applicable to similar but much lesser movements in our own and other countries.

We think back to the dead Redstart we have just picked up, and we know that last night, in the rain and cold wind, thousands of our northern birds battled their way northward through this very pass, on their migration across the terrible fifteen hundred miles of open Caribbean Sea. The origin and the reasons of these aspects of animal behavior are at present beyond human comprehension.

A call comes to us and a few yards along Hummingbird Trail we come upon Laura Schlageter practically prone upon the jungle floor, with a finished water-color painting equally flat in front of her. It is one of a series of Jungle Fragments which, I think, will be a new and exceedingly striking feature of the next Annual Meeting of the Zoological Society.

We walk on, and the Chief Forester of the Government passes in his car and stops to tell of the jaguar he almost ran down after he left us last evening. We are amazed anew at the juxtaposition of automobiles, cement highway and "tigres" in this National Park among the Venezuelan Andes.

As we turn to go back, we see Jocelyn Crane in the distance with her factotum and official tree-climber, Antonio. After two hours in the jungle, both are laden with great blossoming arums and other air-plants with their insect visitors, besides vials of jumping spiders. All we can hope is that we have discovered and interpreted correctly a few hints of the behavior of our jungle neighbors.

Report from the Congo

As we promised in our Belgian Congo Expedition Newsletter No. 8, we intend to keep our membership informed about the expedition through Animal Kingdom. Here is a summary of the latest news received from Charles Cordier, our animal collector.

About the middle of June he moved his base camp from Bongena, 40 miles east of Stanleyville, to a native village called Kisubi about 6 miles out of Stanleyville on the road to Opala. This change of location was necessary because of the difficulty in getting supplies from Stanleyville during the days or even weeks when Charles would be away from camp.

Kisubi is on the opposite side of the Congo River from Stanleyville, but ferries run every half-hour and a houseboy on a bicycle can make daily trips to Stan, if necessary, for eggs and meat and fresh vegetables to feed our animals.

"Ever since our arrival 5 to 7 prisoners, among them one woman, have been weeding and cleaning up around the place, while 28 to 34 men on orders from the State have busied themselves with putting up a cook shed, boys' quarters, a

small bird and mammal house and 8 pens, partly roofed over, which can be serviced from a central corridor," Charles writes. "Four of the prisoners who did the weeding were tied to each other by the neck with a length of rope.

"The moving from Bongena to Kisubi was done on one single, enormous truck without side stakes or anything except a platform about 30 feet long.. I piled the seat high with sticks and about 60 big bundles of roofing leaves, and on top of these the cages with our birds and small mammals. Right behind the cab I placed the icebox and the big heavy cases, one of which houses the Giant Pangolin. After that came all the packing cases, and our own luggage. In the end it was a monster of a load.

"After a short run some of the bottom load shifted to one side and we could only proceed very slowly. It was so bad I practically shrank from leaning out of the cab window for fear of upsetting everything. The crossing of the Congo by ferry had our hearts pounding but things went off fine.

"As for our jeep, it was chock-full of our boys and their belongings – kettles, pans and lanterns. More of the help was perched on top of the big load and our billy goat, which we keep as a reserve meat supply, topped off everything."

Charles mentioned his injured leg only briefly; apparently it is continuing to improve, for he is able to drive the jeep and his letters are full of plans for striking off to the northeast part of the Congo after large mammals. He has specimens of the rare Potamogale or Water Shrew which no one has yet exhibited, and his large Elephant Shrews are thriving.

At the very beginning of his collecting expedition in the Congo, Charles Cordier found this hunting camp in the jungle in the region around Opala, and from the hunters (who are here preparing to smoke-cure an antelope) learned that this is good Congo Peacock territory.

8:00 A.M. ***Keeper Blair's busy morning begins with the unlocking of the Platypusary, changing the signs, rolling up the curtains and removing protective screens.***

KEEPER JOHN BLAIR takes care of only three animals. Other Keepers have to feed, water and clean up after anything from a dozen to hundreds. You might think every other Keeper was passing the word around that if there's an opening in Johnny Blair's job, they'll take it.

But they aren't. Keeper Blair happens to be "The Platypus Man" and three Duck-billed Platypuses are the equivalent, in time-consuming care, of any thirty other animals. They're a full-time job.

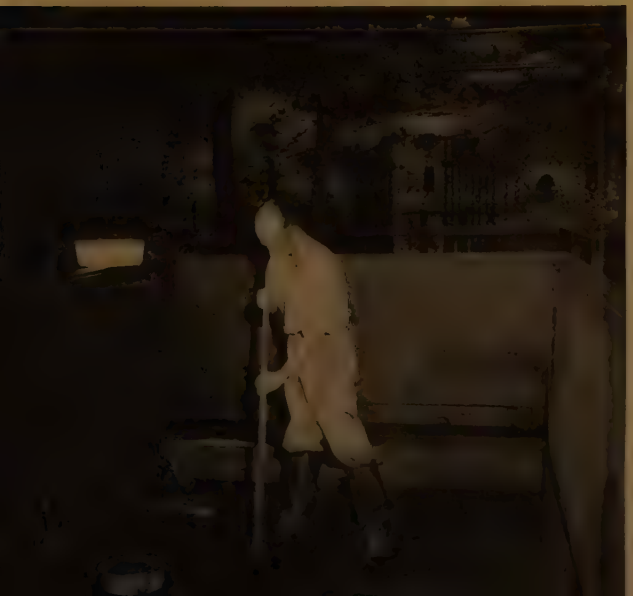
The pictures on pages 112-115 don't begin to tell the full story of The Platypus Man's day, but they do pick out a few highlights. One picture that's typical, but which we couldn't get, would show Keeper Blair, flashlight in hand, at work in the Platypusary late at night. Every evening after dinner he sits down quietly and thinks back over the day, remembering the behavior of his three little animals, thinking step by step of his duties around them. Sometimes he can't be sure of some point — whether he snapped a certain lock, cleaned the dry grass out of a certain elbow in the sleeping tunnels. So he gets his flashlight and trudges over to the Zoo. Always he finds everything in apple-pie order — but he can sleep better that way.

Keeper Blair has been working for the Zoological Society since 1934, first at the old Aquarium and then, since 1941, at the Zoo. He has had charge successively of the Penguins, the Giant Panda and now the Duck-billed Platypuses.

Around the Clock

with the Platypus Man

8:30 A.M. *Now cleaning begins in earnest. The Platypus swimming pool is scrubbed, left-over food collected.*



9:45 A.M. *Mealworms and frogs are issued from supplies at the Reptile House, to be used at the afternoon feeding.*

12:15 P.M.

2:30 P.M.

10:45 A.M.

10:45 A.M. Egg custard is a favorite Platypus food and the Keeper makes a fresh supply every day. It supplements the animals' main diet of earthworms, mealworms and crayfish.

12:15 P.M. It is time for the Platypus Man to test the temperature of the water in the swimming pool and to make necessary adjustments if it varies greatly from 65-70 degrees.

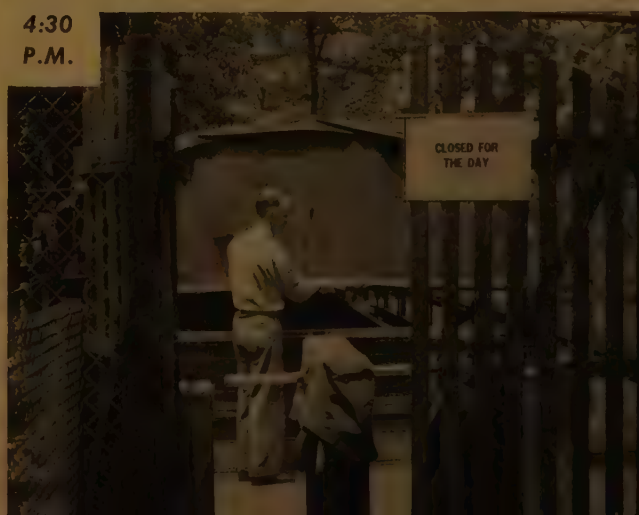
2:30 P.M. By this time, half an hour before the opening of the Platypus showing, crowds are already waiting, getting change for the 5-cent fee that helps pay the cost of food.

2:45 P.M. Cecil, the male, is exhibited one day, Betty and Penelope the next. They must be lifted out of their straw-filled sleeping burrows and placed carefully in the water.

2:55 P.M. A recording telling visitors about the home, haunts and habits of the Platypus is played over the public address system as the gates are about to open to the visitors.

Spare Time

4:30 P.M.



2:45 P.M.

2:55 P.M.

3:00 P.M. The Platypus exhibit is open—and a junior miss under the age of five is first under the turnstile, for small children are admitted without payment of the 5-cent fee.

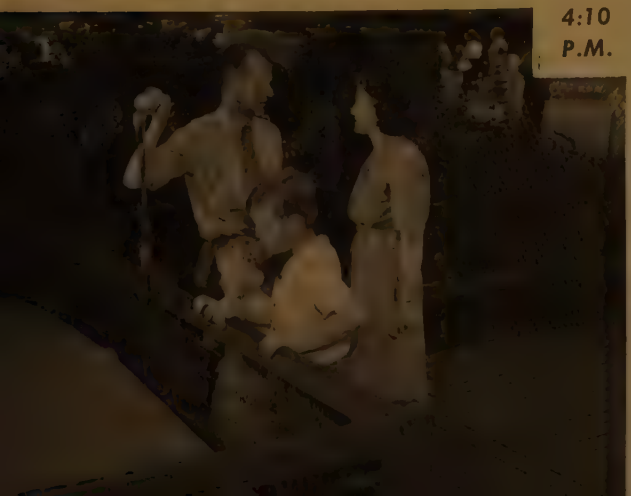
3:30 P.M. Fascinated by the underwater movements of the Platypuses, visitors line the wall of the swimming pool and watch as the little animals cruise in search of crayfish.

4:10 P.M. One hour is about as long as the Platypuses like to stay out during the afternoon (they normally feed at night) and the last visitors leave a few minutes after 4 P.M.

4:30 P.M. Within a few minutes the screens are placed over the pool, the Platypusary is closed for the day, and the Platypuses are free to come and go, to feed and sleep.

SPARE TIME. When evening comes, Keeper Blair still thinks about Platypuses and in recent months he has taken up the hobby of modelling in clay—a Platypus, of course!

3:00 P.M.



4:10 P.M.

3:30 P.M.

Pre-view at Bimini

By ROSS F. NIGRELLI

THE ISLAND of Bimini is a five-mile-long sliver of coral sand and limestone, palm-fringed and periodically hurricane-swept, at the edge of the Gulf Stream just sixty miles due east of Miami. Its blue-green waters abound with a rainbow of tropical fish and some of those fish might abound with parasites.

Hence the New York Aquarium's interest in Bimini — for when the time comes when we can again exhibit a great collection of marine organisms we expect that many of them will come from the waters around this tiny island. It is important to know well in advance what sea creatures are available and how they can be caught and shipped. Still more importantly, we must know what diseases to expect and how they can be eliminated.

At one time Bimini had a certain importance — or notoriety — as a center of rum-runner activities. Its importance today and in the future is likely to be connected with the Lerner Marine Laboratory of the American Museum of Natural History which Mr. Michael Lerner established in 1947 to further field studies in marine biology through the Museum's Department of Fishes and Aquatic Biology. The laboratory occupies about two and a third acres fronting on both the ocean and the harbor sides (for Bimini is only about a quarter of a mile wide), and there are complete facilities for students — including a series of ocean "corrals" for big fish. The laboratory was my headquarters during the six weeks I spent on the island this spring.

More than fifty years ago "three students," as the *Scientific Monthly* called them, went to Bimini to explore its marine resources for the light they might cast upon the Darwinian theories. They were students later to become famous: E. A. Andrews, the marine biologist; T. H. Morgan, the Nobel prizewinner in genetics; and R. P. Bigelow, now one of our great ichthyologists. Thanks to them, we have a good idea of the wealth of sea life around Bimini half a century ago, and it was pleasing to discover that Bimini is still unspoiled. *Cassiopeia*, the jellyfish, awaiting its small-fish prey, still sits upsidedown in the quiet lagoons fringed by mangroves. Around Stokes Cay the shallow waters are brilliant with living (and bad-smelling) sponges. Blue-and-yellow Beau Gregorys slip in and out of their gaping pores. White and pink anemones sway to the slightest movement of the water as if to reach for and snatch a passing shrimp. The naked, olive-colored, mottled gastropods known as Sea-pigeons lie inert in the lee of the island ready to shoot out their purple ink when an inquisitive biologist disturbs them.

An occasional octopus may be seen flowing between the coral shelves. The tube-dwelling, dark red serpulid worms with their constantly moving fringed gills, retract into their elongated homes (attached to dead shells) at the slightest stimulus.

Small red crabs, camouflaged by bonnets of red sponge that they shape with their own claws to whatever millinery fashion has come down through the ages, remain inert that they may not be noticed. The marine banks are still well popu-

lated with *Oreaster*, the giant starfish, with brittle stars and sea urchins (some poisonous, some not). Sea cucumbers abound and make a home for the purplish pearl-fishes that take refuge in the cucumber's intestine.

I was fascinated by the tiny mounds of white sand that betrayed the presence of acorn worms, for Andrews, Bigelow and Morgan had sought this curious creature on Bimini and had managed to secure only half a worm; I would, I hoped, do better. (I might as well say right here that I didn't; I did not get even half an acorn worm).

These primitive worms have a supporting rod or notochord running down their backs, and at the same time possess gill-slits like fishes. A big one reaches a length of nearly ten inches. Disturbed, it gives off a strong bromine odor. These are the most primitive chordates or backboned animals and their larvae are strikingly similar to the young of the echinoderms. Some biologists favor the idea that our very, *very* remote ancestors were starfish-like animals – and thus the acorn worm with its starfish-like progeny is possibly vaguely and a long way off related to us.

I wanted one and dug hard and often in the sand, but the worm was quicker than the shovel and I never even caught sight of a wriggling "tail" disappearing in the watery sand. Nothing short of a power-driven scoop would be fast enough to capture them, it seems.

When the sea-scented darkness falls, Bimini's flats still glow with the flickering lights of myriad luminescent organisms. Millions, billions perhaps, of fire worms burst into blue cold light each mating season at the moment of fertilization.

There is no doubt about it; Bimini today is the Bimini of old, a happy hunting ground for the marine biologist.

The day after my arrival, having explored and marvelled at the wealth of material, I went to work. Clarence and Pedro, my two helpers, collected giant conchs for bait (and for table use, for these great gastropods are delicious eating), and then they set the live-traps a few yards off the laboratory dock. I wanted to see what fish we might easily take for Aquarium purposes.

I saw, and quickly. After a few hours the traps were swarming with brilliant marine tropical

American Museum of Natural History Photo

Offshore from the Lerner Marine Laboratory, in the shallow and crystal-clear waters, are live-pens for such large marine creatures as porpoises and dolphins, barracudas and groupers.

species that will be standard items for our exhibition tanks. There were blue angelfish, triggerfish, tangs, sergeant majors, grunts, cowfish, trunkfish, four-eyed, banded and common butterflyfish, Nassau groupers, black angelfish, French angelfish, multicolored parrot fishes and – prize catch of them all – rock beauties with large splotches of blue-black on the sides and red fins orange-fringed.

What an exhibition those trap-fuls would make in the new Aquarium!

It happens that these particular fishes are most susceptible to the parasites that used to give us so much trouble at the old Aquarium in Battery Park. One monogenetic fluke called *Benedenia (Epibdella) melleni* gets on the eyes and skin of fishes. Living conditions for fishes are apt to be a little crowded in an aquarium and a *Benedenia* infestation can reach epidemic proportions and quickly wipe out an entire collection. If the Bimini parasite population was extremely heavy, difficulties might arise later when Bimini fish come to New York. So I tested the catch, dipping the fish in fresh water. This causes the external parasites to drop off. A whole series of dippings showed that most fishes were free of infection and that the others were only mildly parasitized. So that is one worry the less about Bimini fish. Nevertheless I continued with a systematic survey of the fishes of the area, learning more about their habits, susceptibility to parasites and diseases, methods of control and treatment, all in preparation for the day when we should make our first collection for exhibition purposes. The Bimini waters were surprisingly free from parasites and diseases.

All fishes naturally harbor one or more kinds of parasites, but fortunately not all of them are trouble-making. I was interested in making as complete a collection as possible of these disease-producing organisms, both internal and external. Bimini is a big game fish paradise and whenever a sportsman brought a 500-pound tuna to the dock I was generally on hand for the weighing-in ceremonies. After the weighing and photographing, I went over every fish with a fine-tooth comb, examining skin, eyes, gills, stomach, intestine and other internal organs for parasites. My treasures of little white parasites are now neatly labelled and bottled and catalogued.

Especially did I want to get a look at a freshly-caught marlin and through the kindness of Mr. Axel Wickfeld of Palm Beach I was invited to go out on Captain Eddie Moore's fishing boat. We had hardly cleared the bank at South Bimini and set out the bonefish bait from the outrigger when a blue marlin struck. Mr. Wickfeld jumped into the swivel chair and inside of three or four minutes he had the leader line alongside the boat, the strike boys had the fish gaffed and landed. It was a small marlin, only about 220 pounds in weight.

Two small sucker fish dropped off immediately. As the fish reached the deck I noticed that it was heavily parasitized with copepods, some of which were buried deep in the flesh. I scraped the smaller red and blue parasites off the skin and into a bottle of preserving fluid. Mr. Wickfeld watched me in fascination; he had never noticed such parasites before – and I must say that this particular specimen was unusually heavily infected. I explained that the long, almost worm-like copepods were buried in the flesh and were sucking blood from the arteries. Curious to see them, he asked me to cut into the fish.

That was too much for Captain Eddie. A fishing boat captain's reputation depends upon the total catch of his boat, and under the rules of big game fishing a fish that has had a chunk taken out by a shark or the ship's propeller is disqualified. My dissection would mar the marlin and even though it was a small one, it counted toward the total catch – if it was brought to the dock unscarred. But Mr. Wickfeld had become infected by the bug of scientific curiosity and he talked the captain down. I made a careful incision, cutting out a small wedge of flesh to disclose and remove an enormous copepod.

Sure enough, when the *Panda* (our fishing boat) reached the dock, other captains inspected the catch, noticed the hole in the marlin, and offered their condolences to Mr. Wickfeld and Captain Eddie.

I am glad to say, though, that the tournament judges took a more enlightened view of the matter and agreed to count the marlin to Mr. Wickfeld's and Captain Eddie's credit when I showed them, by slipping the wedge of flesh in and out, that it was I, and not a shark, that had mutilated the fish. And Mr. Wickfeld won the tournament.

Bringing You Up to Date on the Conservation Foundation

By DONALD T. CARLISLE

SO MUCH HAS BEEN HAPPENING — and so fast — that we have not had an opportunity to give the membership of the Zoological Society a comprehensive report on the events set in motion by the creation of the Conservation Foundation, which was incorporated under the laws of the State of New York on March 30, 1948, with the sponsorship of the Zoological Society.

This is an attempt to bring our membership up to date.

Broadening the conservation policy of the parent organization, which in the past has been principally associated with the wildlife conservation movement, the new Foundation is undertaking work in the entire conservation field—soil, forests and vegetation, water sources and wildlife. These purposes are expressed in the second Article of the Foundation's certificate of incorporation, which reads:

"The objects and purposes for which the corporation is formed are to promote conservation of the earth's life-supporting resources — animal life, forests and other plant life, water sources and productive soils — and to advance, improve and encourage knowledge and understanding of such resources, their natural distribution and wise use and their essential relationship to each other and to the sustenance and enrichment of all life."

While Government continues efforts in behalf of conservation on both the Federal and State levels, and although there are a number of important private organizations working for the solution of one or another of conservation's many problems, the need for such an agency as the Conservation Foundation is, we believe, fully substantiated by the results of the staff's work during the brief period of its existence.

Preliminary Action

During the war years the New York Zoological Society, both its trustees and staff members, determined to reorganize the Society's conservation policies as soon as the war was over, broadening their scope and implementing them with a separate and independent staff. To this end the Conservation Division of the Society was established with one staff member in the autumn of 1946.

Interest in the new undertaking, which at that time had no program other than the principle of its establishment, soon was evinced by the proposals of a number of well-qualified men anxious to explore the field of opportunity for this enterprise and to help in the determination of its policies and its initial work program. During the winter of 1946 and the following spring, three more men were recruited for this work, temporary offices were set up, furnished and staffed, and the job of assessing the opportunities for work was undertaken.

During the spring and summer of 1947 the four key staff members deployed over a territory extending from Western Europe to the Pacific Coast, making contacts, attending conferences, familiarizing themselves with the personalities and programs operating in the conservation field. This vitally important background work enabled them to reassemble in the fall of last year with a number of concrete suggestions for projects to be

evaluated and integrated into the Division's first work program — a program concerned first with conservation research, and then with education.

Circumstances have modified the details of this original "blue print" in many respects. The priorities of many of the projects have shifted. The emergence of many new and unexpected opportunities has made it necessary to postpone work on some of them. Others cannot be undertaken until more funds are secured. Without a detailed explanation of what the original list comprised, it is sufficient only to say that they are all still judged to be conservation objectives of the highest importance.

In the course of this exploratory period many individuals in many organizations were consulted. An Advisory Council of scientists and conservationists was formed. The proposed projects were discussed with those best qualified to evaluate them. During these preliminary investigations the staff of what is now the Conservation Foundation received the following recognition for the organization as a whole and for individual staff members:

(1) Endorsement of its principles and cooperation with its efforts were obtained from the U. S. Forest Service; the U. S. Soil Conservation Service; the U. S. Fish and Wildlife Service and the National Park Service.

(2) The president of the Foundation was appointed to serve on the Conservation Advisory Committee of the U. S. Department of the Interior.

(3) He was also appointed to the Advisory Committee to the Economic and Social Council of the United Nations (ECOSOC) in connection with its meeting in May, 1949.

(4) The Foundation has been invited by ECOSOC to assist in the preparation of its agenda for the International Conference on Natural Resources to be held at the United Nations in May, 1949.

(5) The Foundation and the Food and Agriculture Organization of the United Nations are jointly planning to undertake a survey of the "incidence, extent and character of man-accelerated soil erosion" with the object of producing a comprehensive report of danger areas supplemented by authoritative maps.

(6) An effective liaison was established with both the New York State and New York City Boards of Education for the purpose of developing a comprehensive program for conservation education in the primary and secondary schools.

(7) A highly competent crew was developed for the production of educational motion pictures on conservation.

It will be noted that these appointments and associations, made in the few months prior to the Foundation's incorporation, constitute opportunities for effort for the most part rather than accomplished results. However, the potential importance of the Foundation seems clear from the fact that these opportunities arose for the most part spontaneously on all desirable levels — international, national, state and local.

"*Our Plundered Planet*"

Preceding the Foundation's incorporation by only a few days, an event occurred on March 25, 1948, which perhaps has given more form and direction to the new Foundation's immediate future than any other circumstances in its brief history. This was the publication of "Our Plundered Planet" by the Foundation's president, Fairfield Osborn. This work, planned as an expression of the philosophy upon which the Foundation is based, has had an acceptance beyond the most optimistic hope for it. Widely and most favorably reviewed by newspapers and magazines of all types and shades of opinion, the book may well be said to have placed the Foundation squarely in the van of the conservation movement in a matter of days following its appearance in the bookshops.

Heralded as "perhaps the most convincing account of man's material plight that has yet appeared" (Paul B. Sears, New York *Herald-Tribune*), Mr. Osborn's book almost immediately became required reading in a number of Universities and Colleges including Harvard and Yale. Its theme has served as the basis for newspaper editorials, commencement speeches and Phi Beta Kappa addresses. It is already in the hands of every member of Congress. It will in the next few weeks come to the attention of all presidential candidates. It may fairly be said to have done more to set the future course of the Conservation

Foundation than any other single event could have done. This was a result to be hoped for, but scarcely to have been expected in such encouraging terms.

"Our Plundered Planet" has, needless to say, opened a flood of opportunities both for its author and for the Foundation's staff. It has been necessary to set up procedures for screening these possibilities carefully since they could not all be followed.

To illustrate their scope and their importance, a selection of the most significant ones is briefly described in the following paragraphs:

(1) On May 7-8, 1948, Mr. Osborn made the keynote speech at the National Conference on Land-Use Policy held in Omaha, Nebraska, which was attended by several hundred industrial, business, governmental and scientific leaders. This was the first time such a gathering has ever been convened, and, while its immediate accomplishment was by no means complete, it assuredly has great significance for the future.

(2) As a result of this conference, a dinner was given in New York on June 15 sponsored by four of those present and attended by the presidents or executive officers of some thirty such corporations as the Sears-Roebuck Company, Curtis Publishing Company, the Illinois Central Railroad, Bankers Trust Company, Chemical Bank & Trust Company, Wilson and Company, Consolidated Edison, Prudential Insurance Company of America, Weyerhaeuser Timber Company, Corn Products Refining Company, General Foods Corporation and U. S. Steel Corporation. General Dwight D. Eisenhower was present in his new role as president of Columbia University. Mr. Osborn again addressed the dinner guests, and those present unanimously pledged their effort in support of a permanent committee on conservation to grow out of this initial group.

(3) Mr. Osborn has been designated as an advisory expert on the preparatory committee of UNESCO for the United Nations Scientific Conference on the Conservation and Utilization of Resources which meets in May, 1949.

(4) At the Inter American Conference on Conservation of Renewable Natural Resources to be held September 7 to 20 in Denver, Colorado, Mr. Osborn will make the principal address before the panel on the Dynamics of Renewable Resources. At this same conference, George E. Brewer, Jr., vice-president of the Foundation, will address the panel on Education in Conservation Dynamics.

(5) On September 14 in Washington Mr. Osborn will again take part in a four-man panel discussion of "The Fate of Man" to be held under the auspices of the American Association for the Advancement of Science to be broadcast over the Town Meeting of the Air. The other three members of the panel will be Karl T. Compton, Harlow Shapley and Robert S. Hutchins.

These examples of the interest evoked by "Our Plundered Planet" are sufficient to illustrate the force which it has had in bringing its subject, its author and the Conservation Foundation sharply to the attention of the general public.

Meanwhile work in progress by the Foundation's staff has gone forward — projects, it will be noted, in the fields of conservation education and research.

In Education

(1) Under the direction of Mr. Brewer, four eleven-minute educational films with sound and color have been completed. These films, to be known as the Living Earth Series, will be distributed this fall by Encyclopaedia Britannica Films, Inc., and preliminary reports indicate that they will have an unusually high acceptance.

(2) A second series of educational films, to be known as "The Living Forest" series, is in progress.

(3) An "impact" film planned for commercial release and comprehending briefly though fully the subject matter of the Living Earth Series is in advanced script form and much of its photography has been completed.

(4) Plans for a series of film strips to tell the story of "Our Plundered Planet" pictorially for school use is under study.

(5) Adaptation of "Our Plundered Planet" for school text-books is in progress.

(6) Meetings with the heads of the New York State Board of Education have culminated in the decision to incorporate conservation education throughout the state school system. This work to date has been ably carried forward by staff member A. William Smith.

(7) Through a liaison with the United States Office of Education the Foundation has been able to secure the appointment of a Committee on Conservation Education with representatives from each division of the U.S.O.E. This activity has been under the direction of Samuel Ordway, Jr.

(8) As the result of a talk by Mr. Osborn before the members of Berkeley College, Yale University, on February 25, a series of discussions was entered into with members of the Yale faculty with the purpose of determining the ways and means by which conservation teaching can be integrated with the curriculum. In consequence of these conferences Yale is now considering the inclusion of two courses on the subject, one at the graduate level, in the fall term of 1949.

(9) Giving force to the Foundation's program of popular education, plans for the 11-acre Conservation Exhibit area at the New York Zoological Park are advancing to the day when this enterprise can be launched. This is a joint undertaking of the Foundation, the New York Zoological Society, the New York State Department of Conservation and the City of New York. The State will supply the funds, the City the land and the Foundation and the Society the administration. It is hoped that this exhibit will stimulate the creation of such demonstration areas in other population centers.

(10) A "traveling" conservation show to be distributed by the Garden Clubs of America is under consideration.

In Research

Earlier in this report we have mentioned the Soil Erosion Survey that has long stood on the Foundation's agenda. Dr. Mark Baldwin, formerly head of the Soil Utilization Section of the Food and Agriculture Organization of the United Nations, has accepted the Directorship of this survey, and is in Europe at the moment of writing conferring with world soil scientists. His trip was made possible by the Foundation.

The Foundation has also helped to implement the completion of a preliminary survey of conservation education directed by Dr. E. Laurence Palmer, Professor of Nature and Science Education, Department of Agriculture, Cornell University. Support for this work also came from the Charles Lathrop Pack Trust and several other foundations.

In April, 1949, the Conservation Foundation will be represented by Harold Coolidge, a member of its Advisory Council, at the meetings of UNESCO in Fontainbleau, France, held for the purpose of carrying on the work of the Brunnen Conference in an attempt to set up a Union for the protection of nature.

The plan prepared by members of the Foundation's staff, notably by Robert G. Snider, has been accepted as the agenda for the plenary sessions of UNESCO at its 1949 meetings already described.

Within less than a year's time since the drafting of its initial work program, the Conservation Foundation has found itself in a somewhat unique position of leadership in the fight to conserve our natural resources, and in the situation of having more work offered to it than can be immediately undertaken. It is to be hoped that funds will be forthcoming to enable the staff to proceed at the present speed rate towards the objective that depends so much on time.

BEHIND THE SCENES

NEWS AND NOTES OF THE ZOOLOGICAL PARK, THE AQUARIUM AND THE DEPARTMENT OF TROPICAL RESEARCH

Dacca and Her Three Cubs Are on Exhibition

Opinion of the Zoological Park staff as to what is the best exhibit in the Zoo varies from time to time. Recently it has been a race between little Andy, the baby Orang-utan, and the Common Marmosets which are in the throes of bringing up a lively family of two babies. But when Dacca, our tiger mother, brought her three cubs out of doors in the north bay of the Lion House on July 8, there has been no further question: Dacca and her cubs are the best show in the Zoo.

For two or three weeks the youngsters had been making tentative excursions into the world, from the darkness and security of the sleeping compartment in the wall of the Lion House where they were born, but they were never fully on exhibition until they were given the freedom of the big outdoors compartment. Dacca herself found it strange and disturbing to have so much room, and the cubs padded after her wherever she went on her round of inspection. In fact, they were so restless and so determined to stick close to their mother that General Curator Crandall ordered them taken back into their smaller inside cage after a few hours, for fear they would become overheated and overtired.

On subsequent days they settled down and only one hazard presented itself — the high rock ledge that forms the background of the cage. Dacca has a liking for stretching out and resting on the very top of the ledge, and the cubs were determined to join her there. They are still too small and uncertain of their footing, and there was danger that they would tumble from the very top. Consequently they were taken indoors for another day while the Maintenance Department cut and anchored a series of plywood baffles that let Dacca climb to the top but effectively bar the way for the babies. Dacca now has a place to which she can retire and rest when her babies get on her nerves.*

At the age of 10 weeks, the young Tigers are astonishingly fat. They weigh: Prince, 18 pounds 13 ounces; Princess, 15 pounds 3 ounces; Duke, 14 pounds 12 ounces. At a corresponding age, Rajpur, Raniganj and Dacca, who were hand-reared, averaged four pounds lighter.

Pete Still Going Strong

Peter the Great, our elderly male Hippopotamus, was 45 years old on July 13 and as usual posed docilely for newspaper photographers. He is without doubt the oldest male Hippopotamus in captivity but it appears that he has one year to go before setting a longevity record for his species. The record is held by Betsy II of the Amsterdam Zoological Garden, which is said to have died in 1944 at the age of 46 years.

A Rare Fish from West Africa

The mormyrid fish of Africa, often depicted on ancient Egyptian monuments, were probably better known to the Egyptians than they are to present-day scientists. At any rate, very few have ever been exhibited, and the New York Aquarium has not had any in its tanks since 1939 — until now, when a species new to exhibition in the United States has been put on display. Only live specimens have been obtained so far, so it has been impossible to examine the fish and determine its scientific name.

The new mormyrid is about five inches long,

* On July 24, just as we were going to press, Dacca gave way to her "nerves" and slapped the cubs, which had been tumbling over her all afternoon. The blow — meant as normal maternal chastisement, broke the left hind leg of Princess. She will be off exhibition for several weeks.

Our first baby Addax found a sympathetic and patient foster mother in Mrs. Helen Martini, who had to take over when the little antelope's own mother refused to nurse it. This picture was made when the Addax was three days old and just learning what the nursing bottle was for.

entirely velvety black except for creamy bands on the tail. It does not have the recurved snout so typical of the mormyrids, but it does have a flexible chin-barbel projecting from the lower jaw. What purpose it serves, nobody as yet knows.

In 1939 the New York Aquarium exhibited the first mormyrid ever publicly shown in America. It came from the upper Nile.

We Have a King Cobra Again

After two years without a King Cobra in our Reptile House collection, we now have a beauty — a new specimen something more than twelve feet long and apparently in excellent health. It came from India on July 2 via the Zurich Zoological Garden.

Our most recent King Cobra died on July 15, 1946, after being in the collection nine years and nine months. Curator Brayton Eddy estimates that during that time it consumed a third of a ton of snakes — mostly gopher snakes from the southwestern United States.

Grant for Cancer Research

Dr. Ross F. Nigrelli, the Aquarium's Pathologist, and Dr. Eli Goldsmith of New York University Dental College, have been awarded a grant of $8,500 by the National Advisory Cancer Council to continue their work on the cancer-producing action of hormones and a certain complex of chemicals.

"The New Yorker" Visits the Zoo

In its department called "The Talk of the Town," *The New Yorker* on June 19 published the article which follows. It is reprinted here by permission because we like it about as much as anything that has been written about the Zoological Park in a long, long time.

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ON A WARM, MISERABLE MORNING last week we went up to the Bronx Zoo to see the moose calf and to break in a new pair of black shoes. We encountered better luck than we had bargained for. The cow moose and her young one were standing near the wall of the deer park below the monkey house, and in order to get a better view we strolled down to the lower end of the park, by the brook. The path there is not much travelled. As we approached the corner where the brook trickles under the wire fence, we noticed a red deer getting to her feet. Beside her, on legs that were just learning their business, was a spotted fawn, as small and perfect as a trinket seen through a reducing glass. They stood there, mother and child, under a gray beech whose trunk was engraved with dozens of hearts and initials. Stretched on the ground was another fawn, and we realized that the doe had just finished twinning. The second fawn was still wet, still unrisen. Here was a scene of rare sylvan splendor, in one of our five favorite boroughs, and we couldn't have asked for more. Even our new shoes seemed to be working out all right and weren't hurting much.

The doe was only a couple of feet from the wire, and we sat down on a rock at the edge of the footpath to see what sort of start young fawns get in the deep fastnesses of Mittel Bronx. The mother, mildly resentful of our presence and dazed from her labor, raised one forefoot and stamped primly. Then she lowered her head, picked up the afterbirth, and began dutifully to eat it, allowing it to swing crazily from her mouth, as though it were a bunch of withered beet greens. From the monkey house came the loud, insane hooting of some captious primate, filling the whole woodland with a wild hooroar. As we watched, the sun broke weakly through, brightened the rich red of the fawns, and kindled their white spots. Occasionally a sightseer would appear and wander aimlessly by, but of all who passed none was aware that anything extraordinary had occurred. "Looka the kangaroos!" a child cried. And he and his mother stared sullenly at the deer and then walked on.

In a few moments the second twin gathered all his legs and all his ingenuity and arose, to stand for the first time sniffing the mysteries of a park for captive deer. The doe, in recognition of his achievement, quit her other work and began to dry him, running her tongue against the grain and paying particular attention to the key points. Meanwhile the first fawn tiptoed toward the shallow brook, in little stops and goes, and started across. He paused midstream to make a slight contribution, as a child does in bathing. Then, while his mother watched, he continued across, gained the other side, selected a hiding place, and lay down under a skunk-cabbage leaf next to the fence, in perfect concealment, his legs folded neatly under him. Without actually going out of sight, he had managed to disappear completely in the shifting light and shade. From somewhere a long way off a twelve-o'clock whistle sounded. We hung around awhile, but he never budged. Before we left, we crossed the brook ourself, just outside the fence, knelt, reached through the wire, and tested the truth of what we had once heard: that you can scratch a new fawn between the ears without starting him. You can indeed.

Society Will Have Exhibit In City Celebration

New York City will celebrate, between August 23 and September 19, the fiftieth anniversary of the consolidation of the five boroughs. The Zoological Society and other cultural institutions in the city will be represented by exhibits in the Grand Central Palace, prepared under the direction of the American Museum of Natural History. We are sending tropical fish, bright-colored birds and a family of marmosets.

Snake-catching in the Bronx; or, It's All in the Day's Work

The truck, red and enormous, had just rolled to a stop behind the Reptile House when Headkeeper of Birds George Scott rounded the corner on his way home. The driver and another man were standing beside the truck, looking around uncertainly. They walked to meet Scott.

"There's a snake in the truck."

"What kind of a snake?"

"A snake. How should I know what kind? It's a snake."

It was around six o'clock in the evening and the Reptile House staff had gone home. Mr. Scott lives in an apartment in the old service building directly across the road, and he thought of going upstairs and calling Fred Taggart, the Headkeeper of Reptiles. But then he figured it was probably a garter snake or some other small harmless species that had crept into the truck's cargo, and it would be a shame to disturb Taggart for nothing.

"Open her up," he said. The truck driver unlocked the rear doors of the truck and leaped backward.

"He must have jumped twenty feet, getting away from that truck," Scott says.

"The truck was about a quarter full of shoe cartons and I couldn't see any snake, so I climbed in and began pushing the boxes around. In the right-hand corner at the front there was the snake. It wasn't any garter snake – it was a Regal Python, coiled up and quiet.

"I started asking questions then, and the driver told me the day before he'd picked up a snake box at an animal dealer's here in the city. It was consigned to Washington Zoo, and he dropped it at an express office. Then he went on to Boston with a load, brought back a truckful of shoes, and was unloading here in the Bronx when he saw the snake. It'd escaped from the box for Washington and had been hiding behind a partition in the truck – all the way to Boston and back. He was good and scared and wanted to call the cops and have them shoot the snake, but the manager of the shoe store where he was

New Members of the New York Zoological Society

(Between May 1 and June 30)

Founder in Perpetuity
Fairfield Osborn

Life
George Leontis
Mrs. Clara B. Low
Francis F. Randolph
Donald Roebling

Contributing
Carl Abt
Mrs. Walter H. Aldridge
Harry A. Astlett
Kimball C. Atwood, Jr.
Henry L. Batterman
John B. Cabot
S. Winston Childs, Jr.
James C. Clark
Jarvis Cromwell
Mrs. Clarence Dillon
Mrs. John F. Fowler
Robert G. Fuller
Mrs. James W. Gerard
Mrs. Benjamin D. Gilbert
Miss Janet Hesse
William H. Hubbard
Lewis S. Kerr, Jr.
Mrs. Corliss Lamont
Serge LeFebvre
F. H. Leonhardt
Mrs. Robert McKelvy
Paul W. McQuillen
David C. Morrison
Mrs. William P. Roth
T. J. Shanhan
Miss Harriette C. Sheldon
Henry R. Streckert, Jr.
Virgil C. Sullivan
William L. Sweet
Paul H. Terry
Hon. Thomas D. Thacher
Joseph A. Thomas
J. A. Vuilleumier

Annual
Gilbert Adrian
Stephen H. Auerbach
Irving Berk
Master Miles Oakley Bidwell, Jr.
Mrs. Francis C. Bishop
Mrs. Mildred Boyer
Mrs. William Brewster
L. Pierre Brosseau
Kenneth Caron
Mrs. John Bailey Chapman
M. G. Connolly
Arthur W. Crowley
Milton Dammann
Jo Davidson
Mrs. John A. Dix
General Dwight D. Eisenhower
Mrs. Barbara A. Flitcroft
Mrs. Howeth T. Ford
Carl W. Germann
Hugo Gernsback
John Henry Hammond
Fred Keindle
Bernard Levy
Elliott B. MacRae
Shelton E. Martin
Mrs. George P. Milmine
Mrs. John Morresy
Miss Eileen H. Murphy
Alfred H. Newburger
F. Van S. Parr, Jr.
Mrs. Timothy N. Pfeiffer
Mrs. Grace S. Raines
Mrs. J. B. Reboul
Donald S. Rochow
Frank R. Schetty
Lester E. Shippee
Rudolph Simmon
Robert G. Simonds
Fred W. Solley, M. D.
Lyall L. Stuart
Peter Stuyvesant
Miss Dorothy Madison Thompson
Mrs. Floyd L. Vanderpoel
Edward Walsh
Arthur J. Warner
Ira F. Warner

New York Daily News Photo

Baby tigers in the Zoo become accustomed almost from birth to the quick dazzle of photographers' flashbulbs. Under Mrs. Martini's watchful eye, our three cubs made their debut July 8.

delivering his load had the better idea of driving over to the Zoo.

"Well, it was a kind of little python, about ten feet long I figured, so I picked it up. It was quiet and didn't make a fuss, but it started wrapping itself around me. Afraid I'd let it fall, I guess. In about one minute it had two coils around my neck, like a collar. It wasn't squeezing hard, just hanging on. The worst part was that I had one hand full with the snake's head and neck, and had its tail in the other hand, and some loops were hindering my arms.

"Before I knew what kind of a snake it was, I'd piled up a barrier of cartons at the end of the truck to keep it from crawling out, if it was a little snake. With the python draped around me the cartons were in the way and I couldn't climb out. The driver and the shoe store manager wouldn't come and pull the boxes away – they were standing about fifty feet off, goggle-eyed. Finally I kicked the cartons out and climbed down on them.

"My wife was looking out of the window and when she saw me come out with a snake around my neck she phoned Fred Taggart and he came right over. Before he got there, though, I wrassled the python a little and got him partly unwound so I could breathe better. Fred took him the rest of the way off me and put him in a cage until the animal dealer could come and get him next day. It was a good thing the python didn't start squeezing me, though.

"Me scared? It's all in the day's work."

PUBLICATIONS OF INTEREST

ANIMALS OF THE U.S.S.R. By G. M. Vevers, with 97 illus. by Erna Pinner. Pp. xiv 95. William Heinemann, Lt., London & Toronto, 1948. 21 shillings.

Dr. Vevers' book is intended to give a general overall view of the great faunal wealth of the more than eight million square miles included in the Soviet Union. Only the most striking or characteristic species are included, with brief but authentic life-histories of each. In the selection, mammals have much the best of it, leaving space for only a few birds, four reptiles and a single fish. The style is non-technical and so informative that the reader is left with the wish that the work could have been more extensive. The most successful drawings depict subjects which lack feathers or flowing pelage. – L.S.C.

ISLAND LIFE: A Study of the Land Vertebrates of the Islands of Eastern Lake Michigan. By Robert T. Hatt (Editor) and Josselyn Van Tyne, Laurence C. Stuart, Clifford H. Pope and Arnold B. Grobman. Bulletin No. 27 of the Cranbrook Institute of Science. Pp. xi 179, with 43 illustrations and map. 1948. $4.00.

As the Introduction to this well-planned book remarks, "insular faunas have long been of great interest to naturalists" and have contributed greatly to the foundation of the doctrine of organic evolution. Lake Michigan happens to have a string of small islands admirably situated for intensive studies by the Cranbrook Institute of Science at Bloomfield Hills, Mich., and the University of Michigan. Collecting parties from these two institutions worked on these islands from 1937 to 1940 and again in 1944. This is a report on the mammals, birds, amphibians and reptiles collected, with sections on the modification of habits observed, the factors that may have influenced the sometimes curious distribution of animal life, and such material on the geological and cultural history of the islands and their physical characteristics as is necessary to an understanding of the animal population.

At the beginning of their 1948 exhibition season, the three Duck-billed Platypuses were weighed. Here Cecil, the male, is ready to be put on the scales (he weighed 3.54 pounds) by Keeper Blair, while General Curator Crandall and Bird Headkeeper Scott watch proceedings.